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ALUTILE[®]

Aluminium Composite Panel



CE Certificate



SGS Test Report



China Top Brand



Product Exemption From
Quality Surveillance
Inspection



ISO9001:2000
Certificate



ISO14001:2004
Certificate



International Accreditation
Certificate



Company Profile

- Jiangxi Hongtai Group Co., Ltd. was established in 1995, specialized in manufacturing ALUTILE brand Aluminium Composite Panel, Solid Aluminium Panel and Fire Resistance Aluminium Composite Panel etc. Hongtai Group is located in State High-tech Industry Development Zone, covering an area of 150,000 square meters. As a leading foreign-invested Hi-tech. enterprise in Jiangxi province, the company has totally invested USD 20,000,000 to import 6 advanced full automatic production lines; annual output reaches 3,600,000 square meters.
- The main products include: Aluminium Composite Panel and Fire Resistance Aluminium Composite Panel. Numerous specifications are available with thickness varied from 2mm to 6mm, and width from 1000mm to 1600mm. Special coatings on offer include PVDF (Kynar500, Hylar5000) and Polyester.

- As one of the major drafters of China national standard for Aluminium Composite Panel and the stand councilor of China ACP Association, Hongtai Group places much emphasis on science and technology; makes sustained efforts to enhance the innovation ability. It has won many invention patents at home and abroad, the Metal Composite Panel is one of the patent products.
- Hongtai Group has been sticking to the principle of Orientation to Quality and Creation of Famous Brand. In 2001, it was the first enterprise that received ISO9001 & ISO14001 Certificate in this line and later was authorized as Recommendable Construction Product by China Ministry of Construction, Olympic Recommend Building Materials. In 2004, ALUTILE panel has been tested by SGS U.S. Testing Company Inc., which meets the American ASTM Standard. In 2006, ALUTILE won the title of China Top Brand and Product Exemption From Quality Surveillance Inspection. ALUTILE brand products enjoy a good reputation in both domestic and overseas markets. The products have exported to Europe, Australia, Middle East, Middle Asia, Southeast Asia, South America, North America, Africa and many other regions.



■ Hongtai Group Overall View



ALUTILE

CE 888





Production Lines

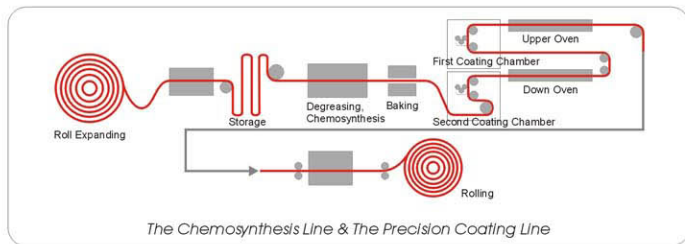
Hongtai Group owns six high-speed digital control punching lines, a core layer production line for aluminium composite panel, a chemosynthesis line, a two-coil coating and double baking line for metal roll material in 1600mm width, a precision coating line in 1350mm, a continuous thermal composite and sawing-cutting production line in 1600mm width and a continuous thermal compound line in 1350mm width.

■ The Chemosynthesis Line

Clean out the lubricating oil and anti-oxidative oil adhered to the surface while being rolled and other impurities such as silicon, magnesium, iron and copper settled on the surface of rolled material. We use qualified chemical and advanced technology from Henkel Co., Germany to do the surface treatment. By means of the technology, a covered film covers the surface with high density, making paint and metal rolls firmly adhere to each other. Therefore, it has very strong adhesive force.

■ The Precision Coating Line

The line is precisely to coat the chemosynthesized rolls under sealed and dustless condition, according to the demands of customer by using an advanced multiple-roller reversal precision coating equipment so that the coating thickness and appearance can be controlled properly. Therefore, the coating reaches the optimized condition in its solvent resistance, hardness, flexibility and possesses even gloss, strong adhesive force and weather resistance.



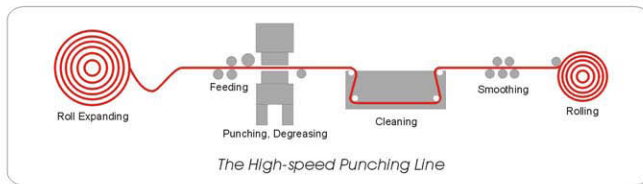
■ The Core Panel Production Line for Metal Composite Panel

Equipped with the microcomputer temperature control system and speed control system, including frequency changeable and adjustable speed in vector grade, the line provides the best polyethylene or fire-resistant core reaches over 8000 tons.



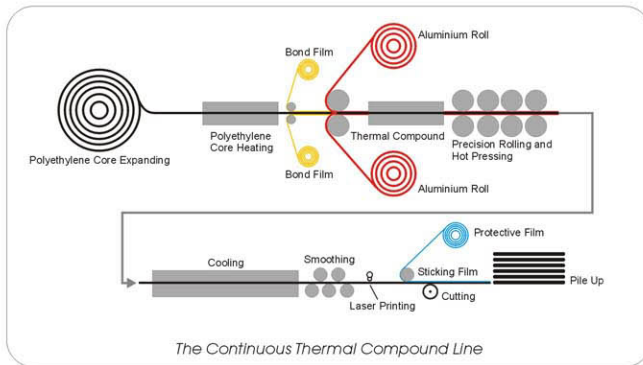
■ The High-speed, Digital Control Punching Line

The high-speed punching machine with digital control is unique in China up to now, having the super width. Its precision can reach 0.01mm. The machine is applied for the special structure punching in core layer of the metal composite decorative panel and for processing the metal ceiling in high quality. After punching, all kinds of dusts and impurities settled on the surface of the material are cleaned out, such as lubricating oil, anti-oxidative oil, silicon, magnesium, iron, copper etc. Finally, the composite property can be increased, obtaining the best result.



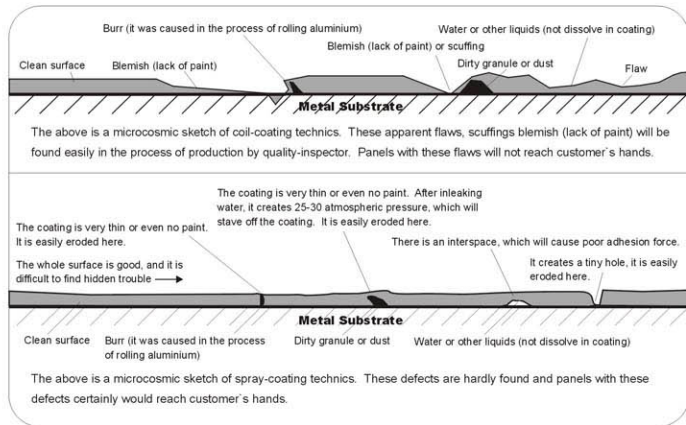
■ The Continuous Thermal Compound Line

It can make the surface layer, core layer and bottom layer adhere to high molecular film firmly through the continuous hot pressing, so the panel surface is smooth and even. With qualified high molecular film, proper technology and strict quality control, we can produce the composite panel with super peeling strength, which is superior to the quality indexes of imported panels in the same kind.



The Advantages of **Coil Coating**

1. High precision roller of coil-coating is fastidious to materials---the surface of the materials must be very clean and even.



2. Even Coating

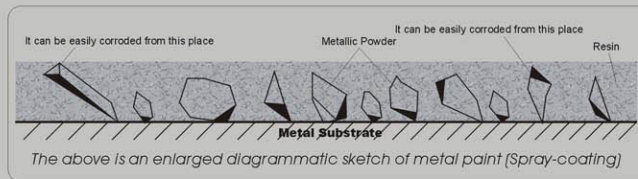
As the roller of coil-coating is produced by high precision equipment (precision: $\pm 1 \mu m$), the coating is very even when coil coating. The coating thickness tolerance is less than $\pm 1 \mu m$. All kinds of stress is always even. In other words, the microcosmic array of coating is uniform that can make the whole panel even in every aspect, such as ultraviolet resistance, absorbing and reflecting all kinds of rays. Though all pigments will be fading after a period, it only appears wholly fading. By spray-coating and other coating methods, it is very difficult to make even coating owing to their restriction of technics and equipment. The tolerance is usually $\pm 5 \mu m$, sometimes the tolerance is more than $\pm 10 \mu m$. It is not uniform motion when coating and the microcosmic array of coating is in disorder, so ultraviolet resistance, absorbing and reflecting all kinds of rays are not uniform. The color of surface will become uneven while exposing in sunshine.



3. For popular metallic paints, coil-coating enjoys more advantages

The metallic colors are favored by more and more customers and architects. Especially, the Silver Metallic and Bright Silver Metallic are accepted by the majority. Metallic color pigments usually use metallic powder as paint, and the shape of metallic powder is flake, piece and polyhedron. After roller acting on, metallic powder is converted, and evenly regularly arrays in resin.

Electrostatic spray-coating stand up in resin because of electrostatic and current acting on, the top of metallic powder, where the resin coating is very thin and easily corroded.



4. Environmental Protection

As the coil-coating technics will not produce paint fog in the process of coating, the efficiency of paint is very high. For spray-coating, it will produce paint fog, which not only contaminates the environment but also wastes the expensive paint.

All ALUTILE Composite Curtain-Wall products adopt coil-coating. Hongtai Group possesses two sets of advanced coil coating production lines.



ALUTILE[®]





Artificial Weathering Test



Salt Spray Resistance Test



Color Difference Analysis



Mechanic Property Test



Coating Analysis



Solvent Resistance



Core Material Test Analysis



Coating Property Test

Pollution Resistance
Heat Distortion
Temperature Test
Grinding Resistance Test
Oxygen Index Test
:

Temperature
Cycle Resistance

R&D Center

As the main scientific research and development base of China Ministry of Construction, Hongtai Group places much emphasis on science and technology and strict quality control. All the raw materials and finished products are strictly tested by advanced equipments imported from America, Germany and Japan. The tests include: 180° peeling strength and dynamic character of raw materials by electronic universal tester, color difference, salt-spray resistance, boiling water resistance, coating thickness, impact resistance, gloss test and so on which guarantee the first grade quality of ALUTILE products.



ALUTILE® Aluminium Composite Panel Property Comparison

Test Item	Test Standard	China National Standard	ALUTILE® Test Value
Coating Thickness (μ m)	ISO2360 (CNC 8406)	average ≥ 25 μ m	30-32 μ m* ✓
Gloss Tolerance	STM0523-89	≤ 10 (gloss < 70) ≤ 5 (gloss > 70)	≤ 10 (gloss < 70) ≤ 5 (gloss > 70)
Pencil Hardness	ASTM D3363-00	≥ HB	≥ 2H ✓
Coating Flexibility	ASTM D1415-83	≤ 2T	≤ 2T ✓
Impact Resistance	ASTM D2794-93	≥ 50Kg.cm	≥ 50Kg.cm
Coating Adhesive	ASTM D3359-87	Class 0	Class 0
Gending Resistance	ASTM D968-93	≥ 5 L/μ m	≥ 5 L/μ m
Solvent Resistance	ASTM D2248-01a	no aluminium appears, Butanone 100 times	no aluminium appears, Butanone 5000 times ✓
Boiling Water Resistance	ASTM D3359-02	no change immersed in boiling water for 2h	no change immersed in boiling water for 6h ✓
Acid Resistance	ASTM D1308-02	5%HCL48h no change	5%HCL48h no change
Alkaline Resistance	ASTM D1308-02	5%NaOH48h no change	5%NaOH48h no change
Oil Resistance	ASTM D1308-02	20# lubrication oil, 48h, no change	20# lubrication oil, 72h, no change ✓
Scrub Resistance	ASTM D1308-02	≥ 10000 cycles	≥ 15000 cycles ✓
Pollution Resistance	AAMA605.2-90	≤ 5%	≤ 3% ✓
Salt Spray Resistance	ASTM B117-03	3000hrs no change	5000hrs no change ✓
Color Resistance	GB/T16259-1996	ΔE ≤ 4.0	ΔE ≤ 2.0 ✓
Degradation of Gloss	GB/T16259-1996	not inferior to grade 2	not inferior to grade 2
Chalking Resistance	GB/T16259-1996	no change	no change
Face Density	ASTM792-91	5.5Kg/m ²	5.5Kg/m ²
Face Density Tolerance	ASTM792-91	± 0.5 Kg/m ²	± 0.1 Kg/m ² ✓
Bending Strength	ASTM D790-03	≥ 100MPa	≥ 105MPa ✓
Bending Elastic Modulus	ASTM D790-03	≥ 2.0 × 10 ⁴ Mpa	≥ 2.5 × 10 ⁴ Mpa ✓
180° Peel Strength	ASTM D903-98	≥ 7N/mm	≥ 12N/mm ✓
Penetrating Resistance	ASTM D732-02	≥ 9.0KN	≥ 9.0KN ✓
Shearing Strength	ASTM D732-02	≥ 28.0MPa	≥ 28.0MPa
Temperature Cycle Resistance	ASTMD1654-92	20 cycles, no change	40 cycles, no change ✓
Thermal Expansion Coefficient	ASTM D696-03	≤ 4.00 × 10 ⁻⁵ °C ⁻¹	≤ 2.00 × 10 ⁻⁵ °C ⁻¹ ✓
Heat Distortion Temperature	ASTM D648-01	≥ 105°C	≥ 105°C ✓
Color Difference	GB/T11942	ΔE ≤ 2.0	ΔE ≤ 1.0 ✓
Nitric Acid Resistance	AAMA640	No requirement	no change, ΔE ≤ 5.0 ✓
Peeling Strength Change	ASTMD1654-92	No requirement	≤ 10% ✓
Elongation for Core Materials	GB1040	No requirement	≥ 45% ✓

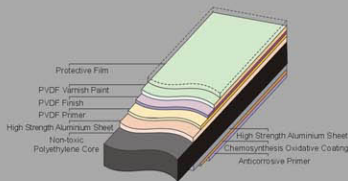
The value marked * is only for PVDF three coated coating

The value marked ✓ is superior to China national standard value

Product Information

Aluminium Composite Panel

ALUTILE Aluminium Composite Panel is compounded with top and bottom layers of aluminium sheet, non-toxic polyethylene core materials. Both surfaces are coil coated with special baking varnish.



Standard:

According to China National Standard GB/T 17748-1999 standard

Specification:

Aluminium sheet thickness: 0.50 x 0.50mm 0.40 x 0.40mm
0.30 x 0.30mm 0.21 x 0.21mm
0.15 x 0.15mm

Width: 1220mm, 1570mm (Maximum)

Length: 2440mm, upon customer's request.

Standard Size:

1220 (Width) x 2440 (Length) x3mm (Thickness) for interior
1220 (Width) x 2440 (Length) x4mm (Thickness) for exterior

Normal Color:

30 kinds
Non-standard sizes and special colors are available according to customers' request.

Application Scope:

- 1) Building exterior curtain walls
- 2) Decoration reformation storey-addition for old buildings
- 3) Decoration of interior walls, ceilings, bathrooms, kitchens and balconies
- 4) Shop's door decoration
- 5) Advertisement boards, display platforms and signboards
- 6) Wallboards and ceilings for tunnel
- 7) Industrial materials, vehicle and boat materials

Characteristics:

High Peeling Strength

ALUTILE panel is cross linking under high temperature with high-performance and molecular binding materials, which reaches the best level for the important feature high peeling strength.



Superior Weather Resistance

By means of KYNAR500 based PVDF coating resin, ALUTILE panel possesses some superiorities in corrosion resistance, alkali resistance, chalking resistance of ultraviolet light. When exposed to the heat of tropical sunshine or the cold of frigid snowstorm, the panel never loses its colorful appearance.



Light Weight and Easy to Process

ALUTILE panel is easy to process for its light weight (3.5-5.6kg/m²) which can decrease the loss during an earthquake. The processing such as cutting, planning, bending to arc and several configurations in right angle can be done by some simple woodworking tools. Designers can also make the flexibility in the panel. The installation work is going to be easy and fast. For this reason, it can save the cost.



Excellent Fireproof Property

Its core layer is manufactured with Anti-toxic polyethylene core materials, having the combustion resistance property. Two surface layers are made of aluminium, which is difficult to be burnt. Therefore, this is a kind of safe fireproofing materials, complying with the fireproof demand in building code.



Coating Evenness, Multiple Colors

Since applied the chemosynthesis treatment and Henkel technology, the adhesion between the paint and panel becomes even; having multiple colors. There is more space for your choice to the color with individuality.



Easy to Maintain

The anti-contaminant property has been obviously improved for ALUTILE aluminium composite panel. Due to good self-cleaning capability, neutral detergent can clean the panel easily even though the pollution is very serious.



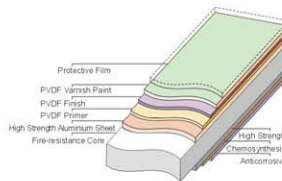
Impact Resistance

The impact resistance and toughness are strong. The coating layer can not be crashed when it's bent. The panel can not be damaged when in a strong windy and sandy condition.



Fire Resistance Aluminium Composite Panel

ALUTILE Fire Resistance Panel is compounded with top and bottom layers of aluminium sheet, inorganic compound flame retardant and nanometer fire-resistant core materials, both surfaces are coil coated with special baking varnish.



Standard Size:

1220 (Width) x 2440 (Length) x3mm (Thickness) for interior
1220 (Width) x 2440 (Length) x4mm (Thickness) for exterior

Normal Color:

30 kinds
Non-standard sizes and special colors are available according to customers' request.

Application Scope:

- 1) Building exterior curtain walls
- 2) Decoration reformation storey-addition for old buildings
- 3) Decoration of interior walls, ceilings, bathrooms, kitchens and balconies
- 4) Shop's door decoration
- 5) Advertisement boards, display platforms and signboards
- 6) Wallboards and ceilings for tunnel
- 7) Industrial materials, vehicle and boat materials

Standard:

China National Standard GB/T 17748-1999

Specification:

Aluminium sheet thickness: 0.50 x 0.50mm 0.40 x 0.40mm
0.30 x 0.30mm 0.21 x 0.21mm
0.15 x 0.15mm

Width: 1220mm, 1570mm (Maximum)

Length: 2440mm, upon customers' request.

Characteristics:

Outstanding Fire Resistance Property

ALUTILE fire resistance panel has outstanding fire resistance property, the oxygen index of core materials reach more than 42. It has passed the attestation of National Center for Quality Supervision and Testing of Fireproof Building Materials and reached grade B1 (difficult to be burnt) of GB8924-1997, NO.2001178.



Superior Fabrication

ALUTILE fire resistance panel is superior fabrication, which can be processed the same as normal aluminium composite panel or remain 2-3mm in core material thickness. The processing such as cutting, planning, bending to arc and several configurations in right angle can be done by some simple woodworking tools. Designers can also make the flexibility in the panel. The installation work is going to be easy and fast.



Coating Evenness, Multiple Colors

Since applied the chemosynthesis treatment and Henkel film technology, the adhesion between the paint and panel becomes more evenness, having multiple colors. There is more space for your choice to the color with individuality.



Perfect Cold Temperature Resistance

The core layer in normal aluminium plastic panel is made from polyethylene, which starts to be brittle at -60°C. After the brittleness, it looks like a glass. Then the brittle point of the core material in fire resistance panel reaches -100°C. So the panel can be used in the frigid area.



High Peeling Strength

The core layer is made from nanometer high efficient flame retardant, melted with high molecular binding materials, so it has super peeling strength. According to GB/T 2790, the test result is 35kg/25.4mm that is superior to normal aluminium plastic composite panel by 10%. The peeling strength doesn't have any change when the fire resistance panel is put in such condition i.e. temperature from -50°C to 80°C and cycling 20 times.



Impact Resistance

The impact resistance and toughness are strong. The coating layer can not be crashed when it's bent. The panel can not be damaged when in a strong windy and sandy condition.





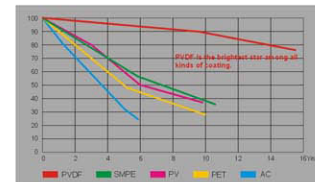
Product Materials

■ 1、The Decorative Layer of Surface

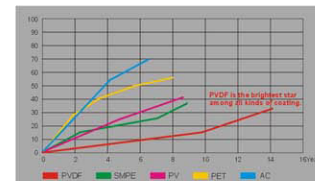
Nowadays the decorative layer for metal substrate mainly includes all kinds of coating, film, surface transformation etc.

1) Paint Coating

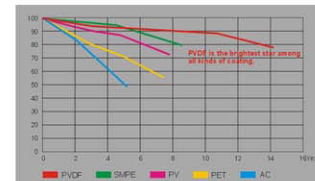
Types: Acryloyl (AC) Silicon Modified Polyester (SMPE) Polyester (PET) Polyester Amide (PA)
SDPE Epoxide Urethane (PV) PVDF



The Comparison Chart of Gloss Preserving Ratio for Different Coatings



The Comparison Chart of Color Change for Different Coatings



The Comparison Chart of Weathering Change for Different Coatings

Why PVDF coating possesses so excellent performances?

The structure combined fluorin-carbon short bond with hydrogen bond is steadiest and firmest structure among all kinds of chemical structure at present. As the criterion of judging stability and fasten of structure, the electronegativeatom index reaches 105 kilojoule/mole. For normal coating, it is just 83.2 kilojoule/mole for energy of normal carbon and carbon combination.

There is an inorganic material whose constituent is SiO_2 . It is created by chemical method and composed of pure inorganic resin. As the energy of composing Silicon and Oxides is 101 kilojoule/mole, this kind of units cannot be destroyed by ultravioletiation in sunshine.

Moreover, performances of this coating, such as contamination resistance, incombustibility, and environmental protection are very excellent.



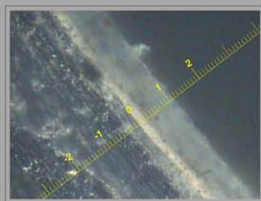
The Coating of ALUTILE Exterior Composite Curtain-Wall Panel

Generally speaking, the higher content of PVDF and better weather resistance, the poorer adhesive force. ALUTILE panel selects a scientific arrange in pairs or groups for PVDF coating. The percent of PVDF in prime paint is low, but the adhesive force is good so that the prime paint can adhere to the base material very well. Strictly speaking, it creates a layer thermoplastic PVDF coating, which possesses very excellent performance of Mek resistance.

Technical Data of ALUTILE PVDF Coating

1) General Properties

Dry Film Property	Test Method	Criteria
60° Gloss	ASTM D523-89	20% to 75%
Formability (T-bend)	ECCA 11-19 ASTM D1737-82	2T, no cracking
Reverse Impact-Crosshatch	ECCA 11-5	No pick off
Pencil Hardness	ASTM D3363-92a	3H
Adhesion:		
Dry	ASTM D3359, Method 8	No change
Wet	37.8°C, 24hrs.	No change
Boiling Water	100°C, 120min.	No change
Abrasion Resistance	ASTM D968-93 (Falling sand)	20 liters/ml as the criterion of AAMA, 70 liters/ml as the actual value
Chemical Resistance:		
HCl	ASTM D1308-79	No change
H ₂ SO ₄	ASTM D1308-79	No change
Mortar	AAMA 605.2-90	No change
Detergent	ASTM D2248-73	No change



The PVDF coating thickness can be measured by the enlarged cross-section diagram, the left drawing is a magnified 4000 times photograph. It can be calculated the coating thickness from the measuring tape: PVDF Prime 5-7 microns, PVDF varnish paints 20-23 microns. Such PVDF Coating arrangement is very reasonable, but in order to reduce the cost, some inferior panels are made by means of increasing the prime thickness and reducing the thickness of PVDF varnish paint.

2) Weatherability

Dry Film Property	Test Method	Criteria
Color Retention	ASTM D2244-93	Max.5 units after 4000hrs.
Gloss Retention	ASTM D523-89	70% after 4000hrs.
Chalking	ASTM D4214-89	Max.8 units after 4000 hrs.
Salt Spray	ASTM D-8117-90 ECCA 11-2	Blister-10 Scribe-8 3000 hrs. aluminium, 35°C
Humidity-Thermal	ASTM D2246-05	No blister No cracking 10 cycles: 24hrs. x 100% RH, 37.8°C, 2hrs. x 18°C, 4hrs. x 24°C
Humidity	ASTM D2247-94	No change 3000 hrs. aluminium 35°C



2) Sticking Film

A layer of decorative film (such as PVC, PE film) is stuck to the surface of base material. Some kinds of films are fallen into disuse because of poor weathering resistance. PET film, a kind of high performance polyester film, is a very thin layer of polyester coating on the surface of base material, then adheres to the surface coating through continuous thermal plying method. There are many kinds of styles, and it can imitate all kinds of material, such as marble and nature lumber etc. PET is more and more popular due to its excellent weathering resistance, compared with normal organic coating transform of surface.



3) Transform Coating

A kind of anti-corrosion transform coating is created on the surface of metal by chemical method. Its performance is more and more excellent along with technology improving. Especially for a kind of porcelain oxidation, there is a compact oxidation layer A12O3 on the surface of aluminium.

The hardness of surface is very strong with excellent scuff resistance and abrasion resistance, and it can be used for decorating floor and possesses the excellent weathering resistance performance. The potential market is very big.

Hongtai Group can supply the above curtain-wall materials with the several decoration coatings.

2、Protective Film



The protective film protects panel from mechanic damage and contamination when cutting, transiting, grooving and folding After finishing installation, protective film will be peeled off.

ALUTILE panels adopt the first-grade quality protective film supplied by France and Germany.

■ **Basic film material: Double PE**

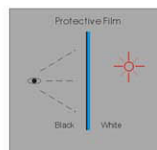
The retardation performance is good, weathering resistance is better than PVC.

■ **Structure type: Inner in black, outer in white**

High cost, with excellent weathering resistance and stable bond performance. The glue rarely remains on the panel surface.

■ **Glue type: Rubber**

White outer, black inner, Black prevents ultraviolet and white reflects ultraviolet, the retardation performance and protection of glue film is excellent.



Distinguish protective film quality:

Film thickness > 0.08mm, black inner and milky white outer

According to the graph, the transparency degree of protective film should be very low. The voice generally is low when tearing off the film with rubber layer, string is long and white, the gloss of rubber layer is low.

The voice generally is high when tearing off the film with acryloyl layer, string is very short and the gloss of rubber layer is high.

The above-mentioned is only for reference. It can not be the final judgment, as it must be tested by advanced instrument.



Yanbu Air Port-K.S.A



Red Sea Mall-K.S.A



Al Basateen-K.S.A



Metropolitan Hotel-K.S.A



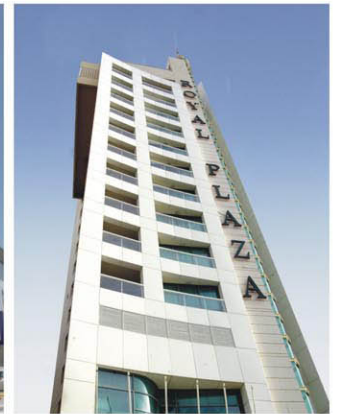
Al Shayeh Commercial Center-K.S.A



NISSAN Show Room-K.S.A



Al Obaikan Project-K.S.A



Royal Plaza Hotel, Beirut-Lebanon



Saudi Investment Authority-K.S.A



Al Jabbari-K.S.A



Slama Center-K.S.A



Nahar Journal Building, Beirut-Lebanon



Shuka Shopping Mall, Moscow-Russia



Turkey



BR Lotus-Brazil



Pousada-Brazil



LAMBORGHINI Show Room-Brazil



TV Education Station in Jakarta-Indonesia



Plaza Asia project, Tasikmalaya-Indonesia

ALUTILE®

CE

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BSI

ISO

PPG

BR

Certificates



CE Certificate



SGS Test Report



ISO9001:2000 Certificate



PPG Approved Applicator Certificate



KYNAR500 Licensee Certificate

Global Technology
Cooperation Partners



China Top Brand



National Products Exempt From Inspection



ISO14001:2004 Certificate



Beckers Applicator Certificate



Germany Patent Certificate

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